

## Self-Sustaining Crop Production Unit, Phase I

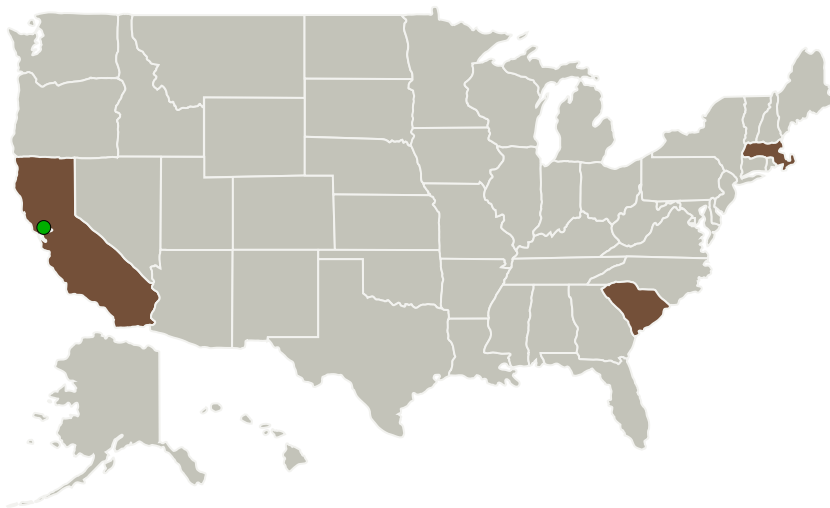
Completed Technology Project (2016 - 2017)



## Project Introduction

NASA's goals to explore deep space through manned missions requires development of self-sustaining life support systems. A diverse team from Freight Farms, Inc. have partnered with Clemson University to merge knowledge of sustainable farming with engineering expertise to create off-grid infrastructure for self-sustaining plant life that will assist NASA with their goals. Freight Farms' current product, the Leafy Green Machine (LGM) will serve as the baseline for this project. The LGM is a fully-operational hydroponic farm built inside an up-cycled freight container and capable of producing yields at commercial-scale in any climate and in any season. This STTR would provide the ability to further Freight Farms' research and development through design of more efficient systems with the aim of achieving independence from the energy grid. Development of advanced environmental controls and application of closed-loop theory to agricultural processes will result in a model for self-sustaining plant life. The innovations resulting from this project will serve purposes for both NASA applications as well as in the commercial market by providing a secure source of food to populations regardless of their climate areas, terrain, energy infrastructure, or available land.

## Primary U.S. Work Locations and Key Partners



Self-Sustaining Crop Production Unit, Phase I

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Organizations Performing Work	Role	Type	Location
Freight Farms, Inc.	Lead Organization	Industry	Boston, Massachusetts
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California
Clemson University	Supporting Organization	Academia	Clemson, South Carolina

## Primary U.S. Work Locations

California	Massachusetts
South Carolina	

## Project Transitions

▶ **June 2016:** Project Start

✓ **June 2017:** Closed out

## Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/139820>)

## Images



## Briefing Chart Image

Self-Sustaining Crop Production Unit, Phase I

(<https://techport.nasa.gov/image/131092>)

## Organizational Responsibility

## Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

## Lead Organization:

Freight Farms, Inc.

## Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

## Program Director:

Jason L Kessler

## Program Manager:

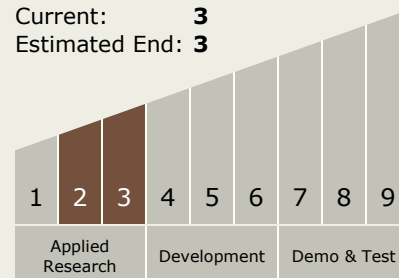
Carlos Torrez

## Principal Investigator:

Jon Friedman

## Technology Maturity (TRL)

Start: 2  
Current: 3  
Estimated End: 3



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## Technology Areas

### Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - └ TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
    - └ TX06.1.4 Habitation Systems

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System